

## Part 1. What did you learn?

1. Tropical Fish just installed a new all-glass saltwater fish tank in their San Francisco store. It is 5 feet long by 18 inches wide by 3 feet high.
  - a. How much glass was used in building this giant tank?
  - b. How much water does this tank hold?
  - c. One cubic foot of water weighs approximately 62.4 pounds.  
The store is planning to install the tank on a table that will hold 1,000 pounds. Will the table be able to support the tank? Explain.
2. Explain to a sixth grader how to find the volume and surface area of a right triangular prism by using the lateral-surface rectangle. Use diagrams, words and formulas.
3. How is the volume of a pyramid related to the volume of a right rectangular prism? If the fish tank in Question 1 had the same base and height, but was in the shape of a pyramid, would it be able to sit on the table in Part c?
4. Cerin, the daughter of the owner of Tropical Fish, wants a similar fish tank for her bedroom. However, it will have to be a miniature version of the store tank, using a scale factor of  $\frac{1}{2}$ .
  - a. How much glass is needed to build Cerin's tank?
  - b. How much water will her tank hold?
  - c. Discuss how you found the solutions to Parts a and b and how they're related to the original tank.
5. Daniel works at a bakery and made a large cake for Tropical Fish's grand re-opening. The cake measured 1 meter by 1.75 meters by 0.5 meters.
  - a. Discuss the difference between volume and capacity. Would you find the volume or the capacity of the cake? Why?
  - b. Find the volume or capacity in both cubic centimeters and cubic meters or milliliters and liters. Explain how you converted between the two measures.

6. Write about the difference between the units used to measure surface area and the units used to measure volume.

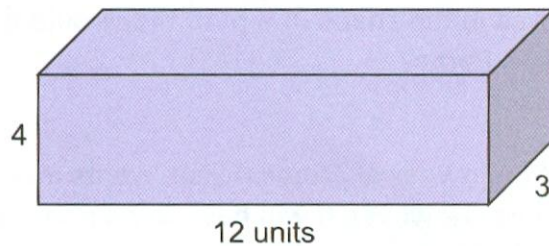
## Part 2. What went wrong?

7. Penelope chose answer B for the multiple choice question below, but her answer was marked wrong. What can you do or say to help Penelope understand why her answer was wrong and how to get the right answer?

A cube has a volume of  $512 \text{ cm}^3$ . What is the surface area of the cube?

- A.  $8 \text{ cm}^2$                                       C.  $64 \text{ cm}^2$   
B.  $256 \text{ cm}^2$                                       D.  $384 \text{ cm}^2$

8. Jorge was asked to find the surface area of the rectangular prism pictured below.



This is Jorge's explanation of what he did:

"I found  $12(3) = 36$  for the base. There are two bases so  $36 + 36 = 72$ . Then I found the area of the lateral-surface rectangle by multiplying 12 by 4 so the area of the box is  $72 + 48 = 120$  units."

Find and correct the error(s) in Jorge's reasoning. Then, find the true surface area of the box. What would you say to Jorge to help him realize his mistake(s)?